REMARKS

Claims 1-24 are pending in the application. Claims 1 and 11 were objected to as informal. Claims 1-24 were rejected. Claims 1, 11 and 21 are currently amended. Applicants respectfully request reconsideration of claims 1-24 in light of the following remarks.

Claim Objections

Claim 1 was objected to as informal for including two method steps labeled as (e). Claim 1 has been amended such that none of the method steps are labeled with the same identifier. Applicants submit therefore that the objection to claim 1 as informal has been overcome.

Claim 11 was objected to as informal for depending from itself. Claim 11 has been amended to depend from claim 10. Applicants submit therefore that the objection to claim 11 as informal has been overcome.

Claim 21 has been amended such that none of the method steps are labeled with the same identifier.

Claim Rejections for Non-statutory Obviousness-Type Double Patenting

Claims 1-9, 10-11, 13, 14-19 and 21 were rejected on the ground of nonstatutory obviousness-type double patenting over claims 1-9, 11-12, 13, 14-19 and 20 of U.S. Patent No. 6,331,164, which issued from U.S. Patent Application No. 09/528,055, to which the present application claims priority. Applicants submit herewith a terminal disclaimer in compliance with 37 C.F.R. 1.321(d), the disclaimer fee of $65 pursuant to 37 C.F.R. 1.20(d), and a statement of ownership under 37 C.F.R. 3.73(b). Applicants submit therefore that the non-statutory obviousness-type double patenting rejection has been overcome.

Claim Rejections Under § 103(a)

Claims 1-24 were rejected under 35 U.S.C. §103(a) as being unpatentable over Marash (U.S. Patent No. 6,198,693).

The application includes three independent claims: 1, 14 and 21.

Independent Claim 1 recites:

A method of artifact rejection comprising:

(a) receiving a signal;

(b) splitting the signal into a noise component and a signal component;

(c) calculating a noise power from the noise component;

(d) based on the calculated noise power, storing the noise component in one of a plurality of noise buffers and the signal component in a corresponding one of a plurality of signal buffers;

(e) repeating steps (a) through (d);

(f) selecting a combination of the plurality of noise buffers having a lowest noise power;

(g) calculating a signal power from a combination of signal buffers corresponding to the selected combination of noise buffers; and

(h) calculating a signal to noise ratio from the signal power and the lowest noise power.

The Office Action acknowledges that Marash does not disclose splitting a signal into a noise component and a signal component, as recited in claim 1. In fact, Marash teaches away from such a step. That is, rather than splitting a signal

into a noise component and a signal component, Marash teaches using the lowest signal power over a predetermined interval as the noise power. See Marash, 9:16-32; Figure 6A. Specifically, Marash states:

> FIG. 6a shows a first embodiment of the qualification unit that uses a signal-to-noise ratio (SNR) as a measurement criterion. The SNR is defined as a ratio of a signal power to a noise power. To calculate the SNR, the measured signals are divided into blocks of signals having a predetermined period such as 40 milliseconds. Block 61 calculates the signal power for each signal block by calculating the square-sum of the sampled signals within the block. **The noise power can be measured in many ways, but one convenient way of measuring the noise power may be to pick the signal power of the signal block having the minimum signal power and to use it as the noise power. Block 62 selects the signal block having the minimum power over a predetermined interval such as 2 second.** Block 63 calculates the SNR as the ratio of the signal power of the current block to that of the noise power. Block 64 invalidates the precise direction if the SNR is below a certain threshold.

Marash, 9:16-32 (emphases added); see also Figure 6A. Marash therefore teaches assigning the lowest signal power over a predetermined interval to be the noise power, and thereby teaches away from the step of splitting a signal into a noise component and a signal component, as required by claim 1.

The Office Action also acknowledges that Marash does not disclose selecting a combination of a plurality of noise buffers having a lowest noise power, as recited in claim 1. Marash also teaches away from this step. That is, rather than selecting a **combination** of a plurality of noise buffers having a lowest noise power, Marash teaches using the lowest signal power over a predetermined interval as the noise power. Marash therefore selects a **single**, lowest signal power and uses it as the noise power. Marash thereby teaches away from selecting a **combination** of a plurality of noise buffers having a lowest noise power, as required by claim 1.

Marash also teaches away from: calculating a signal power from a **combination** of signal buffers corresponding to the selected combination of noise buffers and calculating a signal to noise ratio from the signal power and the lowest noise power, as recited in claim 1. That is, once Marash assigns a noise power to the lowest signal power in an interval, Marash simply uses the signal power of a **single**, current block to calculate the signal to noise ratio for that block. See Marash, 9:29-31; Figure 6A. Marash therefore teaches away from calculating a signal power from a **combination** of signal buffers, and then using the calculated signal power to calculate a signal to noise ratio, as recited in claim 1.

The Office Action also notes that Marash makes reference to computational efficiency. To this end, Marash states:

> The **present invention** has the advantage of being computationally efficient because it does not involve a two-dimensional search of space, as a beamformer would require.

Marash, 3:38-41 (emphases added). This statement refers to the **present invention** of Marash being computationally efficient, and cannot somehow render obvious non-disclosed methods that may also be considered computationally efficient. Further, to the extent claim 1 recites steps different than and/or beyond those disclosed in Marash, one could argue that the method of claim 1 would not be considered as computationally efficient as the method taught by Marash. To this end, Marash's statement that his present invention is computationally efficient teaches away from methods that include steps that are different than and/or beyond those disclosed in Marash, such as the method recited in claim 1, for example.

Because Marash does not disclose, and in fact teaches away from, steps recited in the artifact rejection method of claim 1, claim 1 would not have been obvious to one of ordinary skill in the art based on the teachings of Marash. Marash cannot

therefore render obvious independent claim 1, or claims 2-13 that depend therefrom.

Independent claim 14 recites:

A method of artifact rejection comprising:

(a) receiving a signal;

(b) calculating a noise power from the signal;

(c) based on the calculated noise power, storing the signal in one of a plurality of buffers;

(d) repeating steps (a) through (c);

(e) selecting a combination of the plurality of buffers having a lowest noise power;

(f) calculating a signal power based on the selected combination of buffers; and

(g) calculating a signal to noise ratio from the calculated signal power and the lowest noise power.

The Office Action acknowledges that Marash does not disclose selecting a combination of a plurality of noise buffers having a lowest noise power, as recited in claim 14. As discussed above in connection with claim 1, Marash teaches away from this step. That is, rather than selecting a **combination** of a plurality of noise buffers having a lowest noise power, Marash teaches using the lowest signal power over a predetermined interval as the noise power. Marash therefore selects a **single**, lowest signal power and uses it as the noise power. Marash thereby teaches away from selecting a **combination** of a plurality of noise buffers having a lowest noise power, as required by claim 14.

Marash also teaches away from: calculating a signal power from a **combination** of signal buffers and calculating a signal to noise ratio from the signal power and the lowest noise power, as recited in claim 14. That is, as discussed above in connection with claim 1, once Marash assigns a noise power to the lowest signal power in an interval, Marash simply uses the signal power of a **single**, current block to calculate the signal to noise ratio for that block. See Marash, 9:29-31; Figure 6A. Marash therefore teaches away from calculating a signal power from a **combination** of signal buffers, and then using the calculated signal power to calculate a signal to noise ratio, as recited in claim 14.

Because Marash does not disclose, and in fact teaches away from, steps recited in the artifact rejection method of claim 14, claim 14 would not have been obvious to one of ordinary skill in the art based on the teachings of Marash. Marash cannot therefore render obvious independent claim 14, or claims 15-20 that depend therefrom.

Independent claim 21 recites:

A method of artifact rejection comprising:

(a) receiving a signal;

(b) calculating a noise power from the signal;

(c) based on the calculated noise power, storing the signal in one of a plurality of buffers;

(d) repeating steps (a) through (c); and

(e) selecting a combination of the plurality of buffers having a lowest noise power.

The Office Action acknowledges that Marash does not disclose selecting a combination of a plurality of noise buffers having a lowest noise power, as recited in claim 21. As discussed above in connection with claims 1 and 14, Marash teaches away from this step. That is, rather than selecting a **combination** of a plurality of noise buffers having a lowest noise power, Marash teaches using the lowest signal power over a predetermined interval as the noise power. Marash therefore selects a **single**, lowest signal power and uses it as the noise power. Marash thereby teaches away from selecting a **combination** of a plurality of noise buffers having a lowest noise power, as required by claim 21.

Because Marash does not disclose, and in fact teaches away from, the artifact rejection method of claim 21, claim 21 would not have been obvious to one of ordinary skill in the art based on the teachings of Marash. Marash cannot therefore render obvious independent claim 21, or claims 22-24 that depend therefrom.

The Office Action repeatedly refers to "design needs" as potentially prompting differences between Marash and the claimed inventions. The Office Action did not, however, cite any references that teach or suggest the limitations that are not disclosed in Marash and are recited in the claims. While it appears that a thorough and detailed search of the prior art was completed, the search did not yield a single reference that could be cited to as teaching these limitations.

As to the rejection of claim 1 (and any claim that includes the same or similar limitations), Applicants submit that it is not common knowledge or well known in the art to provide a method of artifact rejection as claimed, that includes: splitting a signal into a noise component and a signal component; and/or selecting a combination of a plurality of noise buffers having a lowest noise power. The Office Action stating that there may be "a design need of determining noise

power" and a "purpose of being computationally efficient" does not make the identified limitations common knowledge or well known in the art.

As to the rejection of claim 7 (and any claim that includes the same or similar limitations), Applicants submit that it is not common knowledge or well known in the art to provide a method of artifact rejection as claimed, wherein the signal comprises at least one response to at least one stimulus, and each stimulus comprises 1024 points. The Office Action stating that there may be "a design need of performing Fast Fourier Transform" and a "purpose of being computationally efficient" does not make the identified limitation common knowledge or well known in the art.

As to the rejection of claim 8 (and any claim that includes the same or similar limitations), Applicants submit that it is not common knowledge or well known in the art to provide a method of artifact rejection as claimed, wherein each of the plurality of noise and signal buffers respectively comprise eight buffers. The Office Action stating that there may be "a design need of storage the values of noise power and signal power" and a "purpose of being computationally efficient" does not make the identified limitation common knowledge or well known in the art.

As to the rejection of claim 11 (and any claim that includes the same or similar limitations), Applicants submit that it is not common knowledge or well known in the art to provide a method of artifact rejection as claimed, wherein splitting the signal into a noise component and a signal component comprises taking the discrete Fourier transform of the signal, and wherein seven different frequencies are employed. The Office Action stating that there may be "a design need of calculating the frequency representation values" and a "purpose of being

computationally efficient" does not make the identified limitation common knowledge or well known in the art.

Because the subject matter of the claim limitations described above are not of such "notorious character" that they are "capable of instant and unquestionable demonstration as being well-known," official notice cannot be taken under MPEP § 2144.03. Specifically, the MPEP states:

> It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. For example, assertions of technical facts in the areas of esoteric technology or **specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art.** In re Ahlert, 424 F.2d at 1091, 165 USPQ at 420-21. See also In re Grose, 592 F.2d 1161, 1167-68, 201 USPQ 57, 63 (CCPA 1979) ("[W]hen the PTO seeks to rely upon a chemical theory, in establishing a prima facie case of obviousness, it must provide evidentiary support for the existence and meaning of that theory."); In re Eynde, 480 F.2d 1364, 1370, 178 USPQ 470, 474 (CCPA 1973) ("[W]e reject the notion that judicial or administrative notice may be taken of the state of the art. The facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men and are not amenable to the taking of such notice.").
>
> **It is never appropriate to rely solely on "common knowledge" in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based.** Zurko, 258 F.3d at 1385, 59 USPQ2d at 1697 ("[T]he Board cannot simply reach conclusions based on its own understanding or experience-or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings."). While the court explained that, "as an administrative tribunal the Board clearly has expertise in the subject matter over which it exercises jurisdiction," it made clear that such "expertise may provide sufficient support for conclusions [only] as to peripheral issues." Id. at 1385-86, 59 USPQ2d at 1697. As the court

> held in Zurko, an assessment of basic knowledge and common sense that is not based on any evidence in the record lacks substantial evidence support. Id. at 1385, 59 USPQ2d at 1697. **

MPEP, § 2144.03 (emphases added). Accordingly, Applicants request that the Office provide a reference(s) to support the Office's positions if the Office intends to maintain any rejection based on the assertions identified above.

CONCLUSION

Applicants believe that claims 1-24 are in condition for allowance. Should the Examiner disagree or have any questions regarding this submission, Applicants invite the Examiner to telephone the undersigned at (312) 775-8000 for an interview. A Notice of Allowance is courteously solicited.

Respectfully submitted,

Dated: February 14, 2008

/Jonathan M. Rushman/
Jonathan M. Rushman
Registration No. 55,870

McANDREWS, HELD & MALLOY, LTD.
500 West Madison Street
34th Floor
Chicago, Illinois 60661
Telephone: (312) 775-8000
Facsimile: (312) 775-8100